

Predecisional Draft

# Implementation Plan

## **U.S. Department of Energy Policy 455.1: Use of Risk-Based End States**

Presented to the  
Assistant Secretary for Environmental Management  
by the Corporate Project 7 Team

August 2003

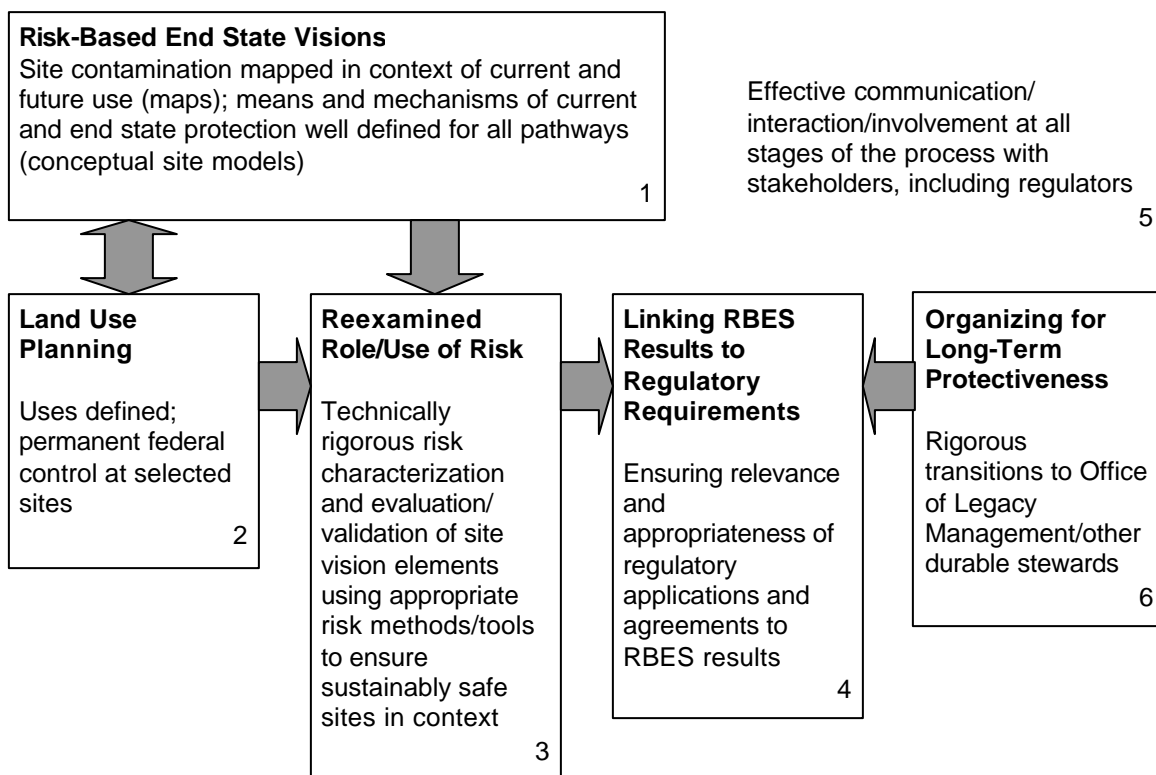
## Executive Summary

A cleanup program driven by risk-based end states will shape remediation, long-term stewardship, life-cycle cost, and other Department of Energy–related activities and concerns. These decisions and impacts will directly and indirectly impact worker, public, and ecological health; the economic health of surrounding regions; environmental and other social justice principles; and political and legal governance.

This implementation plan outlines an integrated approach for the implementation of DOE Policy 455.1: Use of Risk-Based End States. The Department’s goal, in consultation with stakeholders, is to develop and then incorporate in appropriate regulatory documents, a risk reduction strategy that evaluates the total risks associated with both the existing contamination and with the processes involved in cleanup. Ultimately, selection and implementation of cleanup goals must provide adequate protection of human health and the environment for the future land use.

This implementation plan outlines the course DOE will need to take (see figure) to support both accelerated cleanup and the future management of land and/or environmental liabilities:

- the process DOE will use in moving from site-specific risk-based end state visions to changes in site regulatory drivers and cleanup baselines;
- the actions needed to improve the iterative process of evaluating future land use, determining human and ecological risk, and ensuring that regulatory drivers result in cleanup that is both cost-effective and protective;
- the actions needed to improve and document the involvement of stakeholders in the decision-making process; and
- the actions needed to ensure that the Department is organized to provide long-term protection of human health and the environment where hazards remain.



## Table of Contents

<b>Executive Summary.....</b>	<b>i</b>
<b>Acronyms and Terms .....</b>	<b>iii</b>
<b>1. Achieving the stated purpose of DOE Policy 455.1 will require a coordinated strategy .....</b>	<b>1</b>
1.1 The purpose of this implementation plan .....	1
1.2 The genesis of DOE Policy 455.1 .....	1
1.3 This report is structured to present recommendations in five key areas .....	2
1.4 Changes will be needed if DOE is to successfully implement DOE Policy 455.1 .....	2
1.4 Changes will be needed if DOE is to successfully implement DOE Policy 455.1 .....	3
1.5 Field implementation: Using the risk-based end state visions to promote change .....	3
<b>2. Land use planning is a critical component of a sound cleanup strategy .....</b>	<b>6</b>
2.1 DOE must match its property requirements with its future missions .....	7
2.2 Designate permanent federal control of land at selected sites .....	8
2.3 Standardize the Department’s approach to land use planning .....	9
<b>3. All interested and affected parties must reexamine the role and use of risk in cleanup.....</b>	<b>10</b>
3.1 Reconsideration of the assumptions and components of risk methods.....	10
3.1 Reconsideration of the assumptions and components of risk methods.....	11
3.2 Use of conceptual site models to illustrate and understand risk .....	12
3.3 Validation of the RBES vision.....	14
3.4 Expand and improve consideration of risk balancing.....	15
<b>4. Achieve compliance, optimize land use, and use taxpayers’ money judiciously.....</b>	<b>17</b>
4.1 Cooperate to ensure that laws and regulations are applied as intended and criteria are appropriately considered .....	18
4.2 Cost is a criterion in remedy selection and must, by law, be considered.....	19
4.3 Manage waste based on risk rather than source.....	21
4.4 Use institutional controls to improve protectiveness.....	22
4.5 Design and implement effective, site-specific ground water strategies .....	23
4.6 Minimize damage to natural resources .....	24
<b>5. Communicate to improve understanding and decision making.....</b>	<b>25</b>
5.1 Allocate the resources necessary to effectively communicate risk, land use, and cleanup.....	26
5.2 Document the complexity and competing interests.....	27
<b>6. Organize and take action to ensure post-cleanup protectiveness.....</b>	<b>28</b>
6.1 Establish the Office of Legacy Management .....	29
6.2 Formalize the site transition approach in accordance with DOE orders.....	30
6.3 Sustain appropriate regulatory oversight post-closure.....	31

## Acronyms and Terms

ARAR	applicable or relevant and appropriate requirements
ASER	Annual Site Environmental Report
BRAC	Base Realignment and Closure
CERCLA	Comprehensive Environmental Response, Compensation and Liability Act
Department, the	U.S. Department of Energy
DoD	U.S. Department of Defense
DOE	U.S. Department of Energy
EM	(DOE Office of) Environmental Management
EPA	U.S. Environmental Protection Agency
FFA	federal facilities agreement
LM	(DOE Office of) Legacy Management
MNA	monitored natural attenuation
NRC	Nuclear Regulatory Commission
NCP	National Contingency Plan
NRD	natural resource damages
RBES	risk-based end state
RCRA	Resources Conservation and Recovery Act
ROD	record of decision
TYSP	ten-year site plan

## 1. Achieving the stated purpose of DOE Policy 455.1 will require a coordinated strategy

### 1.1 The purpose of this implementation plan

This implementation plan outlines an integrated approach for the implementation of DOE Policy 455.1: Use of Risk-Based End States. The Department's goal, in consultation with stakeholders, is to develop and then incorporate in appropriate regulatory documents, a risk reduction strategy that evaluates the total risks associated with both the existing contamination and with the processes involved in cleanup. Ultimately, selection and implementation of cleanup goals must provide adequate protection of human health and the environment for the future land use.

This implementation plan was prepared by the Corporate Project 7 team and is a key deliverable of the project.\* The lead for implementation within EM is the Deputy Assistant Secretary for Environmental Cleanup and Acceleration, Office of the Core Technical Group.

### 1.2 The genesis of DOE Policy 455.1

*A Review of the Environmental Management Program* recommended that DOE commence discussions with states and other regulators with a view to achieving regulatory agreements that accelerate risk reduction based on technical risk evaluation. The document also recommended that the program take the following steps:

- Prioritize cleanup work to achieve the greatest risk reduction at an accelerated rate.
- Base realistic approaches to cleanup and waste management on technical risk evaluation, with consideration given to anticipated future land uses, points of compliance, and points of evaluation.
- Assess cleanup agreements for their contribution to reducing risk to workers, the public, and the environment.

To support or in some cases initiate the change that would be required to achieve these actions, the Assistant Secretary for Environmental Management created Corporate Project 7: A Cleanup Program Driven by Risk-Based End States. The project

*This policy will result in the reevaluation of the Department's cleanup activities. The Department's goal is to ensure that its actions are both appropriate for, and aligned with, the end state conditions it is striving to achieve.*

DOE Policy 455.1

*EM's cleanup is not based on comprehensive, coherent, technically supported risk prioritization. Many wastes are managed according to their origins, not their risk. This approach has resulted in costly waste management and disposition strategies that are not proportional to the risk posed to human health and the environment as quickly as possible. Instead they have resulted in resources being diverted to lower-risk activities.*

*A Review of the Environmental Management Program,  
February 4, 2002*

---

\* This plan will be conveyed, in accordance with DOE Order 413.3, as part of the project team's Critical Decision 4 package to the Acquisition Executive (the Assistant Secretary for Environmental Management [EM]) for implementation with DOE (the Department).

team led the development of DOE Policy 455.1 and an associated guidance document that described what a risk-based end state (RBES) vision document should contain.

### 1.3 This report is structured to present recommendations in five key areas

The recommendations of this report are provided in Sections 2 through 6 and include the following topics (see Figure 1):

- land use planning as a critical component of a sound cleanup strategy;
- the need for all interested and affected parties to reexamine the role and use of risk in cleanup;
- achieving compliance and optimizing land use, while ensuring judicious use of the taxpayers' money;
- communicating in way to improve understanding and decision making; and
- organizing and taking action to ensure protectiveness in the post-cleanup environment.

Each subsequent section of this plan ties specific actions to achieving the implementation goals of DOE Policy 455.1.

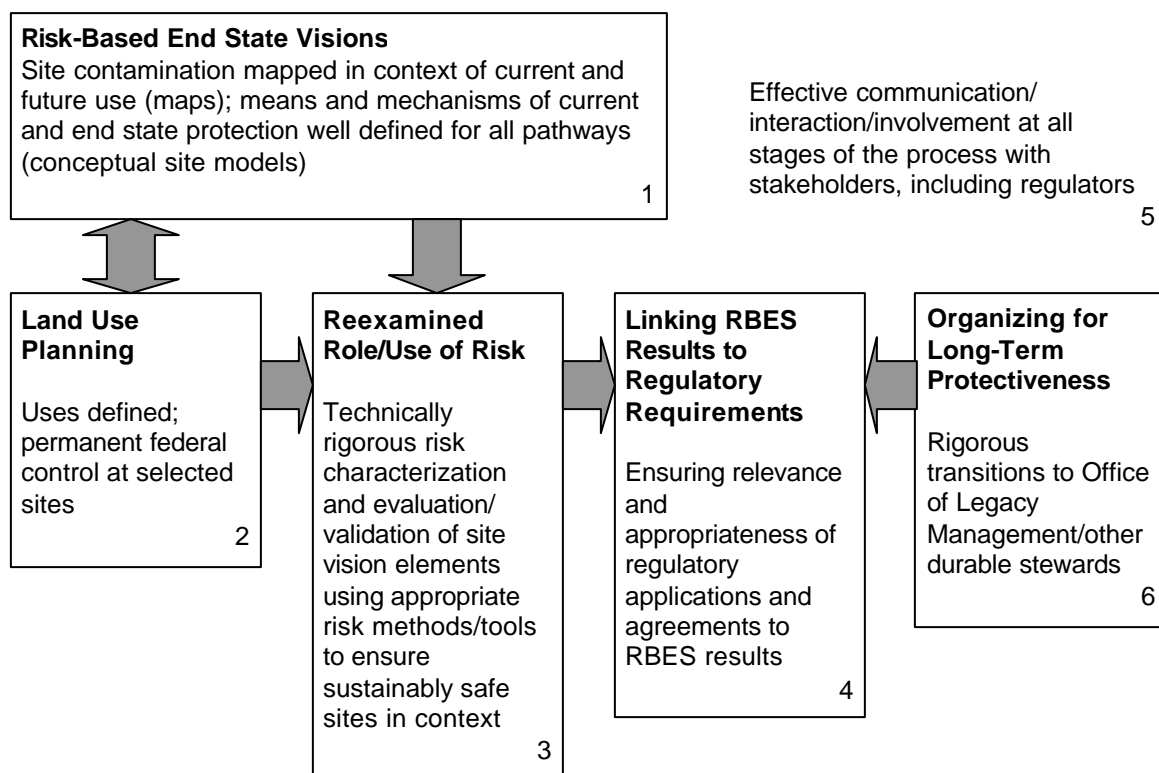


Figure 1. The integrated risk-based end state implementation plan

#### **1.4 Changes will be needed if DOE is to successfully implement DOE Policy 455.1**

Implementation of DOE Policy 455.1 will require a commitment to promote and support change across the Department's organizational structure (budget, land use and facilities, legal, contractual, etc.). Implementation will require changes to

- DOE policies, orders, and guidance documents—identified by a (D) in this document;
- legislation—identified by an (L) in this document;
- current practices for negotiation of and signature authority for regulatory documents; and
- DOE's approach to calculating and communicating risk, conducting cleanup, and managing its long-term surveillance and maintenance requirements.

Many of these changes have been initiated, but systematic follow-through is necessary if the Department is to be successful. EM intends to use the Core Technical Group, an office reporting to the Deputy Assistant Secretary for Environmental Cleanup and Acceleration, to pursue the actions recommended in this document.

#### **1.5 Field implementation: Using the risk-based end state visions to promote change**

In early August 2003, the Department issued guidance to the field to develop risk-based end state vision documents. The guidance document directed more than 30 sites to develop end state visions that consisted principally of maps at three scales (regional, site context, and hazard areas), conceptual site models (depicting hazards, pathways, receptors, and barriers), and associated narratives. Most sites were requested to provide descriptions of both the current state (as of September 30, 2003) and the end state, which was defined as the end of the EM cleanup mission at the site.

The guidance package also included a request for a variance analysis; i.e., the differences between the current projected end state and one based on risk. The purpose of this variance analysis is to enable management to better understand the issues facing the sites and to facilitate the development of site-specific or departmental strategies for modifying cleanup approaches.

The Department recognizes that sites are at different stages of completion and are unique. Therefore, graded implementation includes assessing the impacts of modifying site cleanup

*In implementing this policy, each site undergoing cleanup will be compliant with applicable requirements. In addition:*

- *A risk-based end state vision will be formulated in cooperation with regulators, and in consultation with affected governments, Tribal nations, and stakeholders (as appropriate);*
- *The vision will be followed up with a site risk-based end state implementation strategy that includes an assessment of current cleanup strategies and baselines to align them with the end state vision; and*
- *The site's cleanup strategy and baseline will be revised, as needed, using a graded approach to be consistent with the end state strategy and governing legal requirements.*

DOE Policy 455.1

strategies, land use plans and other baseline documentation. Section 4 includes a discussion of this topic from the regulatory perspective. Figure 2 indicates the series of steps that the Department should take to move from the submission of the draft risk-based end state document in September 2003 to changes in the actual cleanup activities.



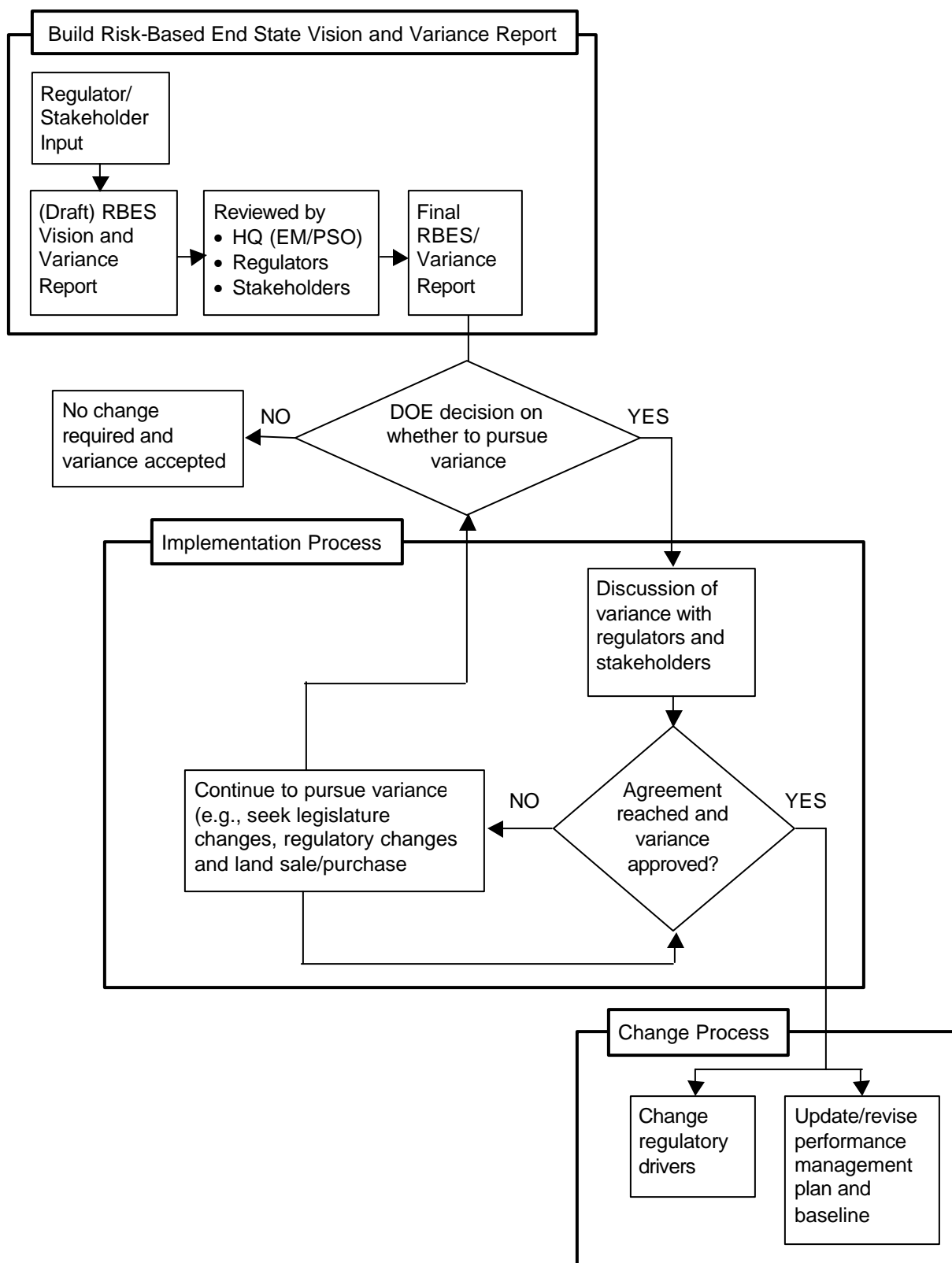


Figure 2. Site risk-based end state implementation process

## 2. Land use planning is a critical component of a sound cleanup strategy

During the Cold War, more than 100 different federally and privately owned sites supplied DOE and its predecessor agencies with materials, equipment, and services. At the end of the Cold War, the Department underwent significant changes. The Department has completed, or is now moving toward completing, cleanup at close to 100 sites. Based on current and anticipated future needs, fewer than 20 sites will remain open for DOE business with ongoing missions.

The Department's sites vary greatly in terms of mission, ecological settings, surrounding communities, and size, with inconsistent approaches to land use planning. Thus, the first step in the process of envisioning and then using risk-based end states as an effective planning tool for cleanup is building a comprehensive land use plan that includes both future use and consideration of adjacent properties.

This section discusses actions in three primary areas:

- matching DOE's property requirements with its future missions,
- designating permanent federal control of land at selected sites, and
- standardizing the Department's approach to land use planning.

*Future land use assumptions allow the baseline risk assessment and the feasibility study to be focused on developing practicable and cost-effective remedial alternatives. These alternatives should lead to site activities which are consistent with the reasonably anticipated future land use.*

U.S. EPA, OSWER Directive  
No. 9355.7-04

*End states should be based on an integrated site-wide perspective (including the current and future use of surrounding land), rather than on isolated operable units or release sites. This is not a license to do less at individual release sites, but rather to better link narrowly considered decisions to a larger perspective. Multiple land use will be appropriate at some sites.*

DOE Policy 455.1

## 2.1 DOE must match its property requirements with its future missions

The Department of Energy has been undergoing a significant change in mission priorities and activities since the late 1980s. During the height of the Cold War, DOE or its contractors engaged in activities related to nuclear weapons production and testing at over 100 sites across the country. The nuclear-related missions of tomorrow's DOE will be conducted on fewer than 20 sites. These sites include no more than ten national laboratories, two deep geological repositories, and a handful of sites associated with the national security mission. The remaining sites have no ongoing mission for the Department. EM will complete remediation at those sites, and they will close.

Given the current and future consolidation of departmental missions, DOE needs to carefully plan for the infrastructure requirements at those sites. This planning is being conducted principally through the use of site-specific ten-year site plans (TYSPs) as described in DOE Order 430.1 Real Property Asset Management.

The Department is in the process of establishing the Office of Legacy Management (LM). LM will be responsible for those federal sites under DOE's control and private sites where DOE has an environmental liability that do not have a continuing mission. LM is discussed in more detail in Section 6.1. The Department's real property assets that no longer support a continuing mission should be made available for transfer, lease, or sale to optimize the use of the land while still ensuring protection of human health and the environment.

### **ACTIONS:**

- 2.1.1 The Department should conduct a 20-year strategic planning process that specifically includes a projection of required facilities and infrastructure. This should include operational requirements, including those associated with waste management and be conducted in a manner similar to the Department of Defense's (DoD) Base Realignment and Closure (BRAC) program.
- 2.1.2 The Department will use its program resources to investigate viable and environmentally sound land reuse options for lands and ensure the most beneficial end use for departmental lands.

*Anticipating the future use of land and facilities given their current condition and constraints is essential for the Department to sustain its national assets over time.*

DOE Policy 430.1

*Some areas of the Rocky Flats site contain contamination and will require further response action. The national interest requires that the ongoing cleanup and closure of the entire site be completed safely, effectively, and without unnecessary delay and that the site hereafter be retained by the United States and managed so as to preserve the value of the site for open space and wildlife habitat.*

PL-107-107 Rocky Flats  
National Wildlife Refuge Act

## 2.2 Designate permanent federal control of land at selected sites

The future use of land at several sites has been formally designated through Congressional Acts (Rocky Flats National Wildlife Refuge Act) or through Presidential Proclamations (Hanford Monument). In addition, some sites have had certain portions designated as permanent federal property through the regulatory process (records of decision [RODs] at Fernald and Weldon Spring).

Formal designation of property as being under permanent federal control should serve to conserve the nation's financial and environmental resources while controlling human and ecological risks. The advantages of this designation should

- allow for greater use of natural processes versus engineered solutions,
- reduce health risk to workers,
- enhance national security,
- retain and preserve valuable ecological areas, and
- reduce concerns about the hypothetical but unlikely subsistence farmer scenario.

The Fiscal Year 2003 Defense Bill permits direct transfer of property from DoD to states, political subdivisions of states (municipalities, localities, local redevelopment authorities) and private, nonprofit conservators for conservation or recreation use. It allows these transfers at no cost, with deed restrictions in perpetuity, with options for transferees to perform cleanup, and with options for subsequent conveyance to similar entities. This new conveyance legislation also allows transferees to be indemnified under BRAC law and purchase private environmental insurance. This legislation has allowed the transfer of federal operating and maintenance costs by transferring property to both public and private conservators, and it has increased community confidence in the management and safety of the properties.

### ACTIONS

2.2.1 (L) Pursue legislation to designate perpetual federal ownership of certain DOE sites.

2.2.2 (L) Pursue legislation to afford DOE the same options as DoD with respect to transfer of property for conservation purposes.

*The Hanford Reach National Monument is a unique and biologically diverse landscape, encompassing an array of scientific and historic objects. Maintained as a buffer area in a Federal reservation . . . with limits on development and human use for the past 50 years, the monument is now a haven for important and increasingly scarce objects of scientific and historic interest. Bisected by the stunning Hanford Reach of the Columbia River, the monument contains the largest remnant of the shrub-steppe ecosystem that once blanketed the Columbia River Basin.*

The White House, June 2002

*Cooperative agreements for management of cultural resources (a) Authority. The Secretary of Defense or the Secretary of a military department may enter into a cooperative agreement with a State or local government or other entity for the preservation, management, maintenance, and improvement of cultural resources on military installations and for the conduct of research regarding the cultural resources. Activities under the cooperative agreement shall be subject to the availability of funds to carry out the cooperative agreement.*

Title 10 U.S. Code Sec. 2684a

### 2.3 Standardize the Department's approach to land use planning

An assessment of the Department's land use planning efforts found that every major DOE site, and the majority of smaller ones, had some type of land use or infrastructure plan. However, these plans are highly variable in terms of scope, content, and format. The plans generally failed to include either one or more key attributes or pertinent information regarding surround property. In addition, the plans had not always been developed with adequate public or affected governmental involvement.

For the reasons above, DOE could achieve substantial benefit from a single, standardized approach for land use planning that is consistent with existing federal laws and standards. A standardized approach would provide a common template for site planning that requires common land use classifications and categories.

DOE Order 430.1B: Real Property Asset Management is the primary DOE document that directs the Landlord Program Secretarial Officers and individual site managers to conduct land use planning. The order includes requirements for

- the preparation of 10-year infrastructure plans,
- the approach to land use planning,
- the declaration of excess facilities on annual basis, and
- the transfer of facilities and/or sites.

In addition, DOE Order 430.1B directs that the Facility Information Management System be maintained as complete and current throughout the life cycle of real property assets, including real property-related institutional controls.

The Department's environmental management system includes the preparation of Annual Site Environmental Reports (ASERs). Integration of RBES mapping requirements with future ASERs or comparable documents will improve understanding of current site conditions.

#### **ACTIONS:**

- 2.3.1 (D) Support the approval and implementation of DOE Order 430.1B as it relates to the use of risk-based end states. Integrate the risk-based end state vision document with departmental land use planning efforts.

*The land-use plan must provide a clear view of land-use issues, capabilities, opportunities, and limitations of the sites. It will identify all land that is needed to support the site mission through annual utilization surveys. The plan must be kept current and support development identified in the site TYSP. At cleanup and closure sites, identified use must be consistent with a ROD's anticipated future or end point use.*

Draft DOE Order 430.1

### 3. All interested and affected parties must reexamine the role and use of risk in cleanup

Risk assessment is the next step in the iterative process of reviewing and clarifying future land use and revising, as necessary, regulatory drivers (see Figure 3). Risk assessment is what enables us to move from a land use and its associated scenarios to a condition that ensures protection of human health and the environment. This section discusses four elements of risk:

- reconsideration of the assumptions and components,
- the use of conceptual site models,
- validation of the RBES vision, and
- the need for, and utility of, risk balancing.

*Risk is defined as the probability that a substance or situation will produce harm under specified conditions. Risk is a combination of two factors:*

- *the probability that an adverse event will occur (such as a specific disease or type of injury) and*
- *the consequences of the adverse event.*

Presidential/Congressional Commission on Risk Assessment and Risk Management, 1977

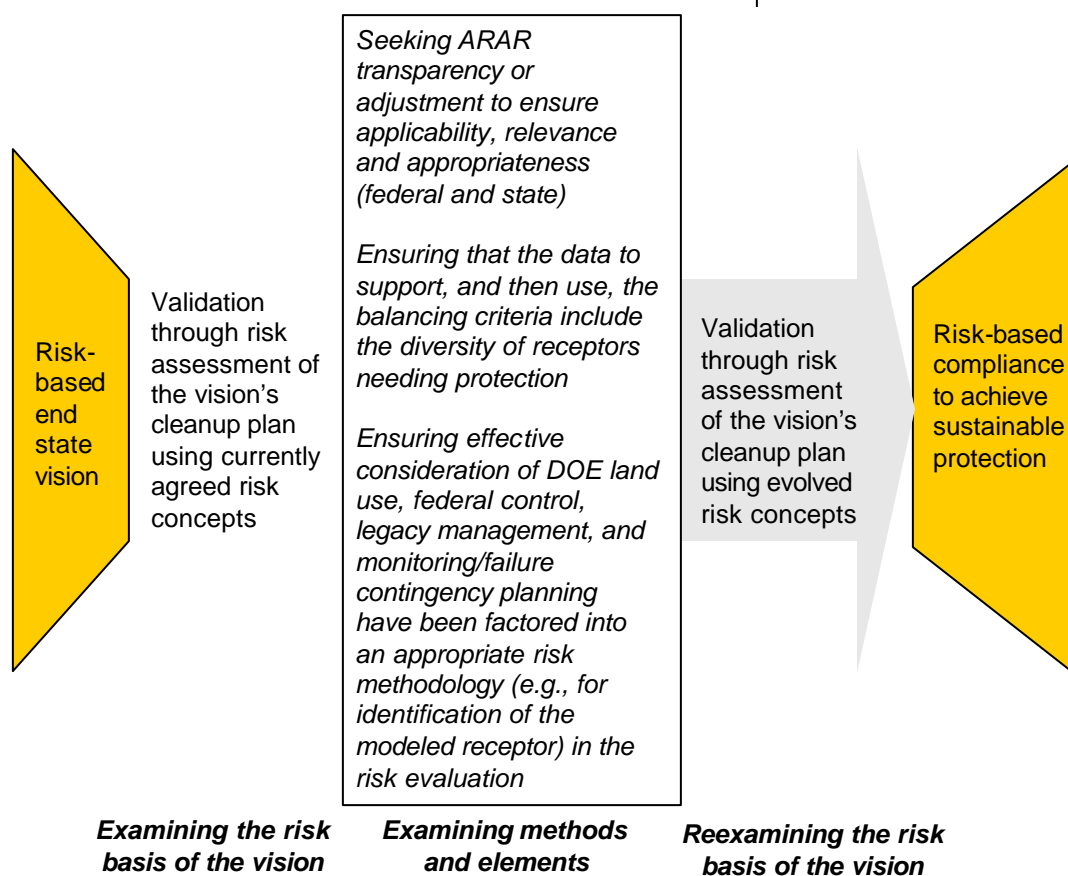


Figure 3. Reassessing the role and use of risk in cleanup in sustainable protection

### 3.1 Reconsideration of the assumptions and components of risk methods

Implementation of DOE Policy 455.1 involves a series of steps to integrate land use and ensure effective management of site properties—especially where hazards are to remain. These steps should result in a substantial redefinition of the assumptions that ought to be used in the development of risk calculations and assessments (among which are the default assumptions, used as the fundamental components to many risk assessments in the absence of site-specific data).

The Department will achieve risk-based end states only if its required remediation approaches are shaped by regulatory risk methodologies that are both transparent and comprehensible. For this reason DOE must work closely with its regulators and stakeholders to review land use plans and ensure that credible scenarios are devised that are consistent with that land use. For example, assuming a residential farmer in the middle of an industrial area is neither credible nor rational. Scenarios that consider reasonable pathways, rational time frames, and the receptor population as a whole can provide a more accurate and credible basis for decision making.

During this process DOE and the regulator must maintain the integrity of the technical process. The Department and its regulators will successfully implement this RBES policy only if we are seen to have effectively considered rational scenarios and the associated risks. That is, we cannot “know” the answer before we assess the risks. But this integrity must be preserved without reducing the risk process to a sequence of first risk assessment and then risk management, because the initial risk assessment is only one part of the environmental risk equation. What needs assessing is not known until the action is taken and the results examined. Hence, assessment and risk management must be iterative.

#### **ACTIONS:**

3.1.1 DOE should catalog and evaluate the risk assessments and associated scenarios and assumptions (and their sources, e.g., ARARs) which have shaped major remediation decisions. This process should be done in two steps:

- Individual sites should seek redefinition with their regulators (and in discussions with affected public) of modeled receptors where the resultant risk scenarios are unrealistic.
- Where national patterns are documented, the Department should develop viable alternative approaches and review them with regulators at EPA and in a national context.

*Clarify the factual and scientific basis of the risks posed by the problem, treating health and ecological risks both qualitatively and quantitatively. Describe the nature of the adverse effects, their severity, and their reversibility or preventability. Identify who is at risk and when they are at risk, and explain the possibility of multiple effects. Evaluate the weight of the scientific evidence and identify the primary sources of uncertainty.*

Presidential/Congressional  
Commission on Risk Assessment  
and Risk Management, 1977

- 3.1.2 The Department should particularly review the default assumptions used by Nuclear Regulatory Commission–(NRC), EPA- and/or state-generated risk guidance documents and raise issues where needed.

### **3.2 Use of conceptual site models to illustrate and understand risk**

A conceptual site model is intended to provide a visual presentation of site exposure conditions that connect a source of contamination to possible human and ecological receptors (see Figure 4). In short, conceptual site models provide, in block diagram form, information regarding the hazards, pathways, receptors, and barriers between the hazards and the receptors. Sites currently use a variety of different conceptual site models.

The site RBES visions contain conceptual site models and the associated geospatial mapping of hazards. This should allow the risk assessments done at individual hazard locations to be related to a broader site or areawide picture. That picture should convey the receptors at risk, where they are, what they can be expected to do, and how the multiple possible contamination pathways at the site might cause exposure and how it will be blocked. The Department has improved its ability to define exposure scenarios that incorporate multiple pathways and depict receptor exposure more completely. Baseline assessments should be fleshed out by iterative evaluations, using real site-specific data instead of default assumptions to the extent possible, to help shape choice of remediation options. An iterative evaluation process must continue to answer questions regarding risk during implementation.

The RBES vision should describe how sustainable RBES protectiveness is achieved. But unless the remediation options in the vision and those selected are identical, the vision's alternative will not have been risk-validated. The validation of the remedial measures (barriers, removals, attenuation projections, etc.) depends on agreement with regulators and stakeholders that the conceptual site model provides the data necessary to support a baseline risk assessment and appropriately defines risks posed by relevant pathways. It further requires that the end-state barrier or remediation option(s) depicted achieve the risk reduction goal.

#### ***ACTIONS:***

- 3.2.1 (D) DOE should develop and issue guidance that provides a more standardized approach to generating and depicting conceptual site models and how they relate to current and evolving risk assessments. These standardized models can then in turn be evaluated on a complex wide basis.



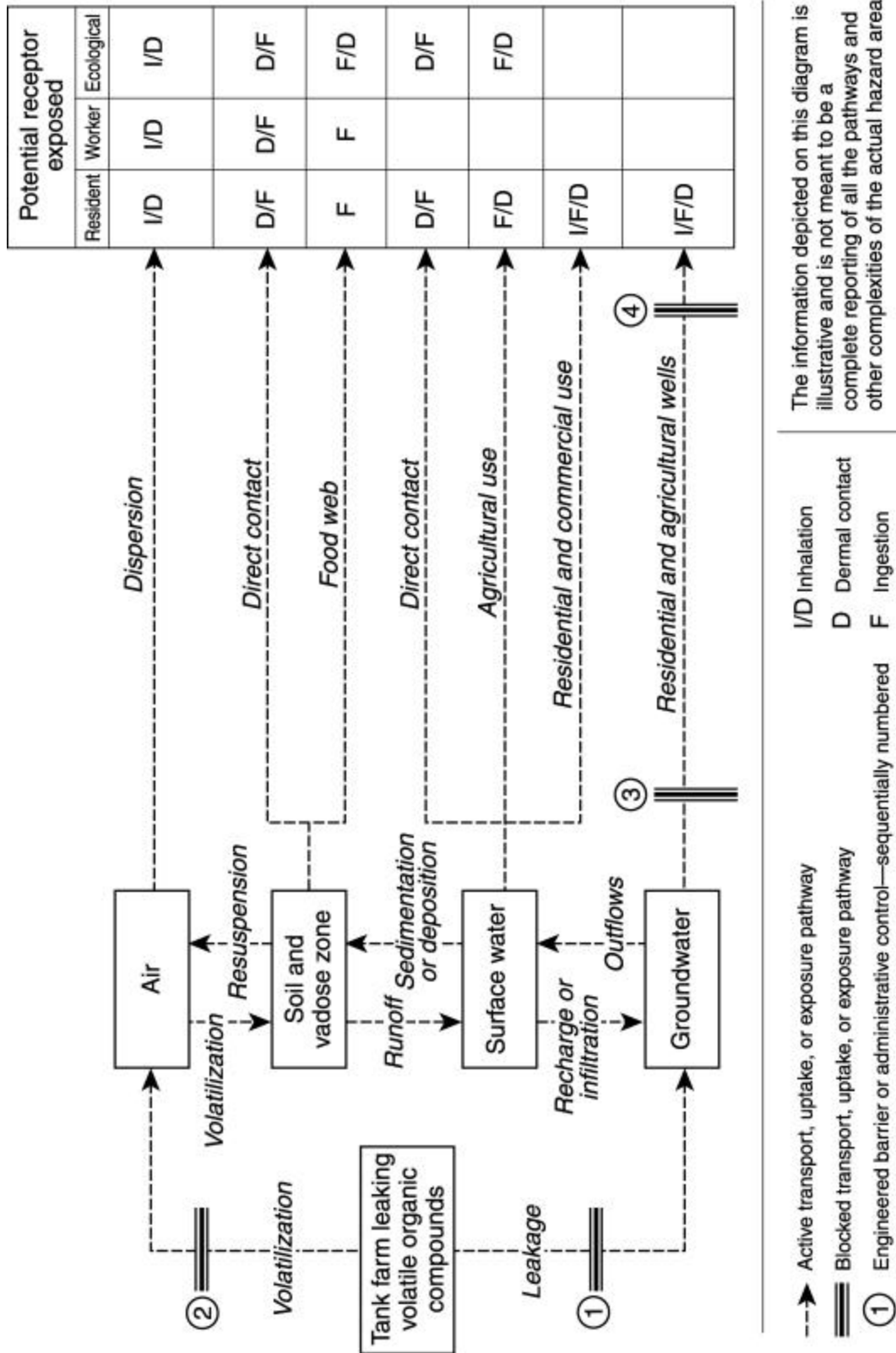


Figure 4. A conceptual site model diagram

### 3.3 Validation of the RBES vision

The RBES vision will need risk validation to provide a basis for regulatory and stakeholder acceptance of where the Department needs to take protective action (the baseline) and the effectiveness of the remediation option in providing a sustainable basis for protection. Where such validation cannot be achieved, both the RBES and compliance agreements need reexamination. Implementation of the RBES policy, then, will require risk validation of both the end state vision and the existing regulatory approach as a preparatory step to defining a final remediation agreement or for changing an existing one.

This iterative process is likely to be persuasive only if it is done in the open. That is, it is important that the risk characterization keep pace with the discussion among those technical people who track how receptors may be affected, those defining the technology and its effectiveness, and those who must evaluate the result and those affected. Particularly if the RBES process seeks to change existing agreements, the risk process that validates it needs to be done clearly and involve experts, decision makers, and other affected parties.

Where there is disagreement about the actual concepts and content of the risk validation itself, additional work will be needed to achieve agreement about whether a site's RBES vision actually establishes an acceptable RBES. It can be expected, then, that some of these RBES visions will require efforts by all parties as they reconsider whether the risk methods and assumptions used by the Department can or should be made to cohere with those of the regulators.

#### ACTIONS:

- 3.3.1. Where regulators challenge remediation options or the underlying assumptions developed in RBES visions, the Department should review these challenges and determine whether (1) the RBES should be changed or (2) the risk policies should be evaluated for their consistency with the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA) or other appropriate regulatory requirements.

*End states are the basis for exposure scenarios developed in baseline risk assessment that help establish acceptable exposure levels for use in developing remedial alternatives in the feasibility study.*

DOE Policy 455.1

### 3.4 Expand and improve consideration of risk balancing

Baseline risk assessments have typically focused on public health risks and secondarily on ecological assessments. These are the threshold factors under CERCLA. However, CERCLA then calls for balancing other criteria, several of which are risk criteria. Individual sites and the Department can more effectively implement an RBES program if defensible approaches to risk balancing are used, that is, ones that result in an effective and credible approach to seeking results that result in lowest total risk. The following are steps toward that goal and will expand the range of issues that departmental representatives bring to the evaluation of risk end states.

Making decisions with the final end state in mind requires a number of risk trade-offs, or risk balancing:

- ecological and human health;
- worker and public health;
- among competing contaminated areas;
- among temporal patterns of cleanup;
- among species (plants vs animals, one animal vs another);
- among the sites across the complex, including considerations of national equity; and
- current vs future risks and short-term versus long-term risks.

Such risk balancing is required within and among operable units within sites, as well as for the DOE complex as a whole.

DOE is required to conduct its activities in a manner that is protective of both human health and the environment. This requirement suggests that the first risk balancing decisions should involve examining the risks to both human and ecological receptors. Ecological receptors of concern are usually endangered or threatened species or sensitive species assemblages. Risk to these receptors (both during and after remediation) should be balanced against risk to humans. Within this risk balancing, the trade-offs between lives lost due to injuries, accidents, and future health risks of workers should be contrasted with the risk from public exposure (both on and off site, now and in the future).

Within ecosystems, risk balancing should involve examining the relative risks to different species or species groups of particular remediation options (e.g., monitored natural attenuation). Removal of soil or sediment disrupts on-site ecosystems and all organisms therein. Further, leaving pollution in place may be less disruptive where levels are not causing adverse ecological effects. Risk balancing is a useful tool for examining the trade-offs between the risk generated by one contaminated operable unit versus another on the same DOE property. When the risk are considered for each

unit independently and at different times, different levels or degrees of cleanup may result in inconsistencies across the site.

The usefulness of risk balancing in determining the order of remediation has often been overlooked and deserves careful consideration by DOE sites. Part of the risk balancing decisions involving timing of remediation may rest with whether the risk is mainly to on- or off-site receptors. In some cases, risk balancing might affect sequencing of cleanup.

Risk balancing should occur across the DOE complex. This type of risk balancing is a prioritization among sites. Is it better to clean up smaller sites with little contamination, small sites with greater contamination, or larger sites with greater contamination, and in what order? While risks to human and ecological receptors enter into balancing across sites, environmental and social equity are additional key factors in risk evaluations.

### ***ACTIONS***

- 3.4.1 Work with natural resource trustees, regulators, and risk assessors to provide risk assessments that allow risk balancing among human and ecological receptors and between public and worker health.
- 3.4.2 Work with stakeholders to provide transparency regarding the assessments that led to risk balancing among the different receptors.
- 3.4.3 Benchmark examples where sites have been successful in discussions with regulators in achieving risk balancing among the relevant factors.
- 3.4.4 Develop risk balancing information that addresses issues of environmental equity for different operable units of large sites and for the entire site to be compared across the DOE complex.

#### 4. Achieve compliance, optimize land use, and use taxpayers' money judiciously

Sections 2 and 3 of this document dealt principally with land use and risk to human health and the environment. Assuming that investigations in these areas have led to seek a change to the existing cleanup strategy, then DOE and its regulators must seek the correct regulatory approach to accomplish those goals.

There will be a tendency to maintain, or even promote, the status quo as the “right” answer. Senior DOE management and the senior managers from the regulatory community will need to intervene to implement changes. This section looks at the following areas associated with regulatory processes associated with risk-based end states:

- applying regulations in a manner that is consistent and correct,
- changing laws and modifying orders to manage waste based on risk rather than source,
- using institutional controls to support protectiveness,
- develop and implementing groundwater strategies, and
- minimizing damages to natural resources.

Presuming that a change is needed to a federal facilities agreement (FFA), ROD, or other regulatory document, the management of DOE and its regulators should consider the following items before proceeding:

- quality of data and analysis that support the change,
- change in protectiveness compared to the current cleanup plan,
- cost savings or growth that would result from the change—near term and life cycle,
- time required to achieve the change,
- status of the current cleanup effort,
- type of regulatory document that drives the action,
- scope or breadth of the regulatory document that needs to be changed, and
- the frequency and extent of changes already made.

Thus, when a change is proposed, both DOE and its regulator should be able to provide a compelling case to the public as to why the proposed approach is protective. While incentives should never be used to replace sound technical decision making, DOE, its regulators, and the public should be able to discuss the range of options that provide adequate protection of human health and the environment.

*The Department shall continue to comply with applicable Federal, state, community, and treaty requirements when proceeding with this effort, including but not limited to RCRA, CERCLA, the National Contingency Plan and its Natural Resource Damage Assessment provisions, and other applicable requirements.*

DOE Policy 455.1

##### Nine Criteria for Evaluation of Cleanup Alternatives (EPA 1990)

###### *Threshold Criteria*

1. Overall protection of human health and the environment
2. Compliance with ARARs

###### *Balancing Criteria*

3. Long-term effectiveness and permanence
4. Reduction in toxicity, mobility or volume through treatment
5. Short-term effectiveness
6. Implementability
7. Cost

###### *Modifying Criteria*

8. State acceptance
9. Community acceptance

#### 4.1 Cooperate to ensure that laws and regulations are applied as intended and criteria are appropriately considered

DOE has often accepted as applicable or relevant and appropriate requirements (ARARs) requirements that do not meet the statutory standard or the National Contingency Plan's (NCP) eight comparison factors (see below) at 40 CFR 300.400(g)(2). This practice has at times unnecessarily increased the costs and complexity of response actions and is inconsistent with CERCLA Section 120 mandate that federal facilities use U.S. Environmental Protection Agency (EPA) "policies and guidelines" to prevent unnecessarily increasing the costs and complexity of response actions. In accordance with the NCP, the following comparisons shall be made, where pertinent, to determine relevance and appropriateness:

- the purpose of the requirement and the purpose of the CERCLA action;
- the medium regulated or affected by the requirement and the medium contaminated or affected at the CERCLA site;
- the substances regulated by the requirement and the substances found at the CERCLA site;
- the actions or activities regulated by the requirement and the remedial action contemplated at the CERCLA site;
- any variances, waivers, or exemptions of the requirement and their availability for the circumstances at the CERCLA site;
- the type of place regulated and the type of place affected by the release or CERCLA action;
- the type and size of structure or facility regulated and the type and size of structure or facility affected by the release or contemplated by the CERCLA action;
- any consideration of use or potential use of affected resources in the requirement and the use or potential use of the affected resource at the CERCLA site.

#### **ACTIONS**

- 4.1.1 (D) All parties should work to identify and eliminate ARARs that are not applicable and support waivers for those that are not appropriate. This effort will require a higher level of management consideration by both parties than has been historically exercised.
- 4.1.2 (L) Amend CERCLA Section 121(d)(4)(F) to include federal facilities as having the ability to waive an ARAR when the cost of the cleanup outweighs the totality of remaining risks to be addressed.

*Such remedial action shall require a level or standards of control which at least attains Maximum Contaminant Level Goals established under the Safe Drinking Water Act and water quality criteria established under Sections 304 and 305 of the Clean Water Act, where such goals or criteria are relevant and appropriate under the circumstances of the release or threatened release.*

*In determining whether or not any water quality criterion under the Clean Water Act is relevant and appropriate under the circumstances of the release or threatened release, the President shall consider the designated or potential use of the surface or groundwater, the environmental media affect, the purposes for which such criteria were developed, and the latest information available.*

*CERCLA Section 121(d)*

#### **4.2 Cost is a criterion in remedy selection and must, by law, be considered**

As described in the NCP and in EPA guidance, cost must be considered through most of the remedy selection process. Cost is a consideration during the development and screening of remedial alternatives, for example. Cost is also a consideration during the detailed analysis of alternatives and the identification of a preferred alternative (i.e., it is one of five balancing criteria within the nine remedy-selection criteria).

Both the CERCLA statute and the NCP require that, after a remedy is shown to be protective and to meet ARARs, cost-effectiveness be considered. The NCP states that a remedial alternative is cost-effective if its “costs are proportional to its overall effectiveness.” This determination is made by evaluating the following three of the five balancing criteria: long-term effectiveness and permanence; reduction in toxicity, mobility, and volume through treatment; and short-term effectiveness. The overall effectiveness determined from these three criteria is then compared to the cost to determine whether the remedy is cost-effective.

DOE finds that its site personnel, its contractors, and its regulators have not always made these comparisons in a quantitative or rigorous manner (see Figure 5). In this regard, all parties, regulators included, should be held accountable for sustaining, agreeing to, or mandating requirements that provide marginal improvements to protectiveness at significant cost. There is precedence for this requirement: by the end of Fiscal Year 1999 EPA had updated a total of 300 remedy decisions (18 of which were federal facilities), thereby saving an estimated \$1.4 billion.

#### **ACTIONS**

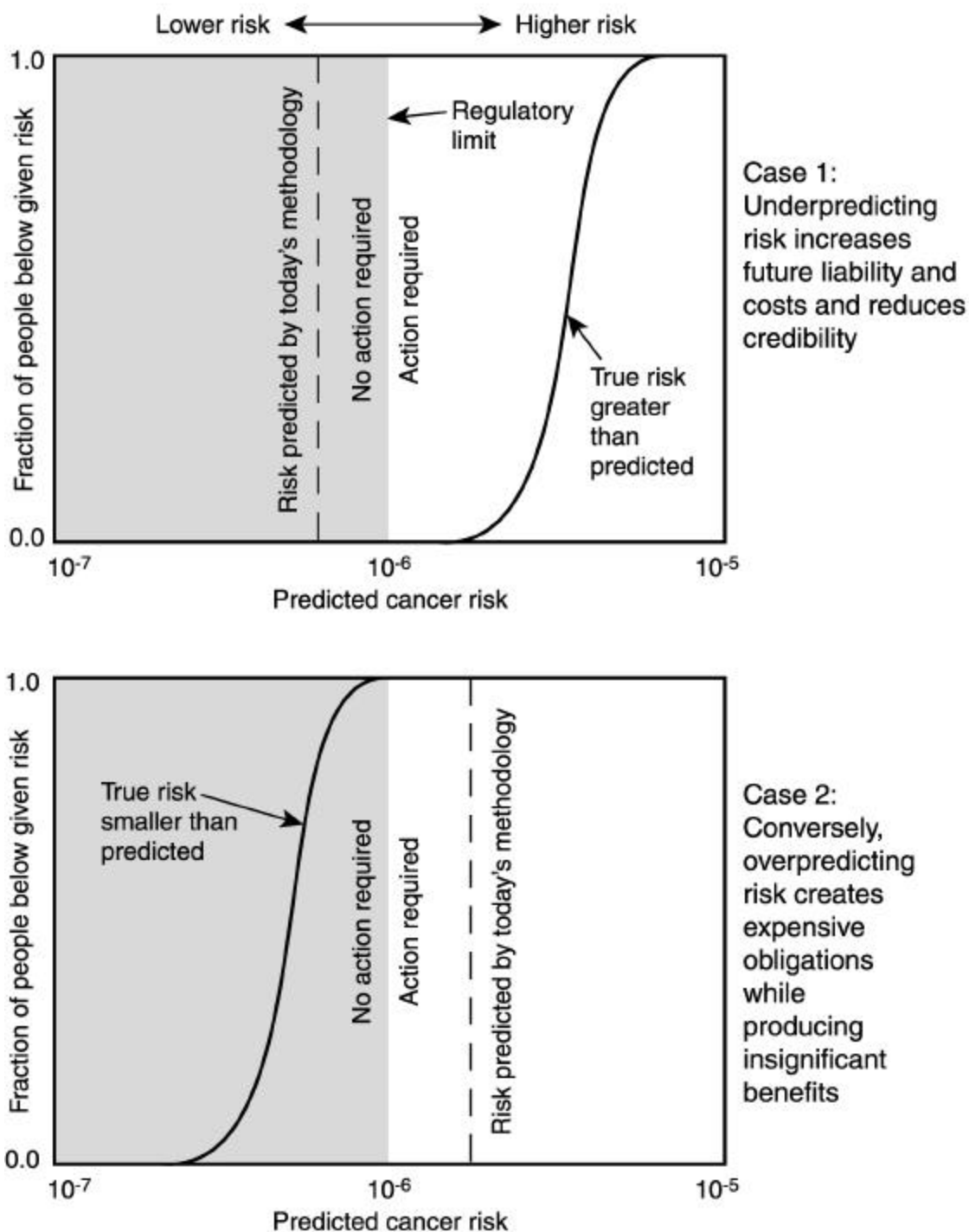
- 4.2.1 (D) DOE should work with its regulators to provide transparency and clarity to the public in situations where trade-offs of cost versus protectiveness are a factor.
- 4.2.2 (D) DOE and EPA headquarters should cooperate to ensure that cost, as a criterion, is correctly considered in accordance with the law for all remedy decisions that exceed \$10 million.

*Costs that are grossly excessive compared to overall effectiveness of alternatives may be considered as one of several factors used to eliminate alternatives.*

40 CFR 300.430(e)(7)(iii)

*When CERCLA is the response authority, all nine CERCLA remedy selection criteria shall be evaluated. Remedies passing the threshold criteria will require a complete evaluation of the balancing criteria. Modifying criteria shall also be considered in remedy selection.*

DOE Policy 455.1



**Figure 5. Accurate risk prediction using all available data leads to minimum costs but saves more lives per dollar spent**



### 4.3 Manage waste based on risk rather than source

*A Review of the Environmental Management Program* states, “The current framework and in some cases, the interpretation of DOE orders and requirements, laws, and regulation create obstacles to achieving cleanup that reduces risk to human health and the environment as quickly as possible.” The review recommends, “A superior approach would be to focus consistently on reducing risk to the public workers, and the environment. In consultation with regulatory agencies and stakeholders, cleanup strategies should be developed on the basis of technical risk evaluation.”

The regulatory approach to waste, and disposal of radioactive waste in particular, has been structured according to a classification based on where it was generated in the nuclear fuel cycle (e.g., low-level waste, high-level waste, transuranic waste, spent fuel, etc.). In the case of high-level waste, the historical definition related to its origin.

The scientific community, both in the United States and internationally, has grappled with how to establish a more rational system based on risk in the disposal environment. These recommendations include a category of waste that is exempt because the risks such waste pose in the specific environment where they are found is de minimus and does not need regulation.

DOE used its authority under the Atomic Energy Act to develop a more rational system through DOE Order 435.1, including classification of incidental waste. DOE is currently in the process of revising DOE 435.1 in view of a district court decision that the incidental portion of the DOE order violates the Nuclear Waste Policy Act.

#### **ACTIONS:**

- 4.3.1 Sites should highlight in their variance analysis actions that require legislation or actions by regulatory agencies to achieve a risk-based approach.
- 4.3.2 Work with regulatory agencies, particularly NRC, to develop an approach and order language consistent with the Nuclear Waste Policy Act in determining appropriate disposal fission products of concentration sufficient to be declared other than high-level waste.
- 4.3.3 Work with the scientific community and regulatory agencies to develop a more comprehensive risk-based classification that includes an exempt category of waste.

*The fundamental principle of the proposed classification system that hazardous waste should be classified in relation to disposal system (technologies) that are expected to be generally acceptable in protecting public health.”*

NCRP Report 139 2002  
Risk-Based Classification of  
Radioactive and Hazardous  
Chemical Waste

*High-Level Radioactive Waste  
(1) Irradiated reactor fuel, (2) liquid waste resulting from the first cycle extraction system, or equivalent, and the concentrated waste from subsequent extraction cycles, or equivalent, in facility for reprocessing irradiated reactor fuel, and (3) solids into which such liquid waste have been converted.*

NRC, 10 CFR 60 (1981)

*High-level radioactive material resulting from the reprocessing of spent nuclear fuel including liquid waste produced directly in reprocessing and any solid material derived from such liquid waste contains fission products in sufficient concentration; and other highly radioactive material that the Commission, consistent with existing laws determines by rule requires permanent isolation.*

Radioactive Waste Policy Act

#### 4.4 Use institutional controls to improve protectiveness

DOE uses institutional controls to manage its lands, facilities, materials and resources. Institutional controls may include administrative or legal controls, physical barriers or markers, and methods to preserve information and data and to inform current and future generations of hazards and risks. In certain circumstances these institutional controls may be authorized by or required as part of the decision process established by various laws such as the Nuclear Waste Policy Act, the Atomic Energy Act, RCRA, CERCLA, or cultural resource management statutes. In other cases, there are no specific statutory requirements, but DOE has decided to use institutional controls to supplement active remediation, pollution control, public and resource protection, or physical security or to bolster the integrity of engineered remedies.

In situations where unrestricted use or unrestricted release of property is not desirable, practical, or possible, institutional controls are necessary and important to DOE efforts to fulfill its programmatic responsibilities to protect human health and the environment. It is DOE policy to use institutional controls as essential components of a defense-in-depth strategy that uses multiple, relatively independent layers of safety to protect human health and the environment.

##### **ACTIONS:**

4.4.1 (D) DOE should formalize guidance to the field regarding the use of institutional controls in remedial actions. That guidance should specify the following:

- Institutional controls should be considered early in the decision-making process, and costs should be determined and compared with alternative remedial design strategies.
- Institutional controls should be documented in appropriate regulatory documents and land transfer agreements. Documentation should include the rationale for the controls, exposure assumptions, restricted uses of the property, cost estimates, and enforcement.
- In the case of land transfer, a certified real property Specialist should be used to ensure that institutional controls are enforceable in that jurisdiction.

*When the selected remedy results in the need for long-term surveillance and maintenance on site, risk control concepts should include layered and redundant institutional controls, commensurate with the risks to maintain protectiveness.*

DOE Policy 455.1

#### 4.5 Design and implement effective, site-specific ground water strategies

It is generally recognized that contaminated groundwater is the most difficult of the hazards that would remain at a remediated DOE site. For this reason DOE has issued *Guidance for Optimizing Groundwater Response Actions at Department of Energy Sites*. Released in May 2002, the guidance document provides project managers and decision makers with an overview of key considerations in designing and implementing optimal groundwater response strategies.

Currently, a significant portion of DOE's groundwater cleanup costs are associated with operation of pump-and-treat systems, yet it has long been recognized that pump-and-treat remedies may not achieve restoration within a reasonable time frame in many settings typical at DOE sites. Although effective in addressing higher levels of contaminant concentrations, once optimization measures have been fully utilized, continued operation of a pump-and-treat system is generally not cost-effective in addressing the more dilute portions of the remaining plume, leaving monitoring or monitored natural attenuation (MNA) as the long-term strategy for ensuring protectiveness.

EPA has established "favorable conditions" for the use of monitored natural attenuation as an acceptable groundwater restoration strategy:

- The potential for near-term unacceptable exposures has been eliminated.
- No active source remains (i.e., the inventory of mobile contaminants is not increasing over time at a rate such that concentrations will exceed health-based levels).
- The plume is brought to equilibrium.
- Natural attenuation will be able to restore groundwaters within a time frame that is compatible with future use.
- MNA is reasonable compared to more active measures.

#### **ACTIONS:**

4.5.1 As part of their end state vision and consistent with the May 2002 guidance, site managers should review all ongoing groundwater remedies at their sites to determine whether sufficiently detailed and documented performance metrics are in place.

4.5.2 Sites should pursue MNA as a remedy in accordance with DOE's *Decision-Making Framework Guide for the Evaluation and Selection of Monitored Natural Attenuation Remedies at Department of Energy Sites*, May 13, 1999.

- 4.5.3 DOE and EPA must examine the validity of State laws that override CERCLA's inherent balancing criteria.

#### **4.6 Minimize damage to natural resources**

The Department manages a diversity of ecological resources, spanning 2.5 million acres and more than 30 states and territories. These resources range from former agricultural lands; to sensitive habitats; to relatively pristine, undisturbed ecosystems that can be considered natural treasures. In several cases (e.g., Hanford, Idaho National Engineering and Environmental Laboratory, Rocky Flats) the Department owns and manages the last areas of undeveloped land in the regional area, with the vast majority of that land being untouched by the Department's previous missions.

DOE intends to address, to the extent possible and appropriate, reduction or elimination of injury and risk to any natural resources which may have been put at risk by releases of hazardous substances or the response actions taken to address the releases.

The Department considers any unaddressed natural resource injury to be a potentially compensable liability under CERCLA Section 107(f) and therefore a part of the "life-cycle" cost of any particular remedy that does not eliminate or reduce such loss or injury. As such, an unaddressed natural resource injury should be considered as one aspect of the NCP's remedy selection criteria. Thus, when a response action does not reduce or eliminate a compensable natural resource injury, the compensable damages that are left unaddressed are part of the cost of choosing that particular remedy and should be factored into the remedy selection analysis.

The Department should resist external requirements to take response actions which result in injuries where none previously existed (such as when a response action causes collateral ecological damage). If those external requirements are imposed through legal action, the Department should pursue the statutory exemption from liability provided for under CERCLA Section 107(f)(1), that is, the Department has identified and documented the injury and the fact that it has been caused by an external requirement to take a response action.

#### ***ACTIONS***

- 4.6.1 The Department will develop and issue a formal policy statement on natural resource damages (NRD) and issue guidance on steps to minimize NRD liability.
- 4.6.2 The Department must seek exemptions from liability, where appropriate, by documenting irreversible and irretrievable commitments of resources in an environmental energy statement or comparable environmental analysis.

## 5. Communicate to improve understanding and decision making

DOE has had an active public participation program since the early 1990s. This effort has led to increased levels of public knowledge and better understanding of the Department's missions, land use requirements, and cleanup activities. The result has been a more informed stakeholder and a more informed Department of Energy.

These efforts to improve public participation have led to greater levels of trust between the Department and its stakeholders. Much of this trust rests on a foundation of positive personal relationships between DOE site management and community leaders. Nevertheless, there continues to be room for improvement—both on the side of DOE and on that of its regulators and stakeholders.

Risk communication must be a two-way process with the Department and its stakeholders listening to each other's concerns, constraints, information, and interpretations and values. This section examines two areas where improvement is needed if DOE is to be successful in implementing DOE Policy 455.1:

- DOE must allocate the resources necessary to effectively communicate risk, land use, and cleanup.
- DOE must be able to better document the complexity and competing interests associated with remedy decisions.

*The work of science is to substitute facts for appearances, and demonstrations for impressions.*

J. Ruskin

### 5.1 Allocate the resources necessary to effectively communicate risk, land use, and cleanup

Public participation is a fundamental component in program operations, planning activities, and decision making within DOE. DOE policy on public participation supports actively seeking, considering, and responding to the views of its stakeholders in a timely manner. However, this policy does not require acquiescence to stakeholder demands over all other considerations.

It is in the Department's best interest to communicate with its stakeholders—defined as individuals, groups, host communities, and other entities in the public and private sectors that are interested in or affected by any of DOE's activities and decisions. Good communication depends on all parties exhibiting clarity of thought, accuracy, fairness, openness, and respect for the other parties involved.

Communication regarding environmental cleanup activities and the residual risk of remaining hazards is not easy. It requires patience, time, and sincerity and must be based on credible science. Clear communication of the risks involved must be voiced by both DOE and its regulators, with all parties providing accurate information and being held accountable for claims that they make or don't make. DOE must take the time and expend the resources to properly communicate with stakeholders before spending tens or hundreds of millions of dollars on a remedy decision.

#### **ACTIONS**

- 5.1.1 To be successful in using the risk-based end state as a tool, DOE site personnel must improve their ability to communicate the cleanup options, the risks associated with those options (worker, public, and ecological), and the rationale for decisions.
- 5.1.2 DOE should continue to pursue improvements in its public participation efforts, particularly in the area of risk communication.

*Regulators shall be asked to concur and affected and interested governments shall be consulted in the development of the risk-based end states. Site managers will establish communication approaches for working with stakeholders for all phases of this effort in conjunction with preparation of their site vision.*

DOE Policy 455.1

*Public participation is open, ongoing, two-way communication, both formal and informal, between the Department of Energy and its stakeholders concerning DOE's missions and activities. Effective public participation is at the core of good community relations, which is essential for DOE facilities to achieve their missions. Regular, interactive communication enables all parties to learn about and better understand the views and positions of each other.*

DOE Policy 141.2

## 5.2 Document the complexity and competing interests

In conducting cleanup there are many values to be considered and many criteria to take into account. For example, the NCP does not specify how the five balancing criteria should be balanced—there are no weighting factors specified for the criteria. They must exist, but they are implicit and determined case by case. While the NCP requires the use of permanent treatment to the extent practicable, it also requires that remedies be cost-effective. According to the General Accounting Office, as reported in a 1997 *Resources for the Future* report, the majority of Superfund remedies have relied on some degree of engineering or institutional controls despite the clear statutory and EPA preferences for permanent treatment.

As discussed in Section 6 of this document, there are various reasons for not achieving unrestricted use at a site, including technical or economic limitations, worker safety and health, and collateral ecological damage. In other cases, the economic vitality of a corporation or surrounding communities (e.g., Mound, Pinellas, Paducah) or national security concerns (Los Alamos and Livermore national laboratories, Oak Ridge Y-12 Plant) place an emphasis on sustaining ongoing industrial activities in such a manner that prevents cleanup to unrestricted use.

Regardless of the reason, there is a need to clearly document the complex system of values, factors, and activities that were involved in arriving at the remedy decision. This documentation provides clarity to DOE, its regulators, and stakeholders regarding the rationale for the decision. This documentation should force all parties to be clear about what they are asking for and why they believe it is necessary to protect human health and the environment in a cost-effective manner.

### **ACTIONS**

- 5.2.1 DOE, EPA, and state regulators should work cooperatively to better document, and make more transparent, the scientific evidence and factors considered in making remedy decisions.

*Risk reduction measures, life-cycle costs, uncertainties, and other relevant policy factors of the decision shall be made visible in site cleanup strategies and remedy decision documents.*

DOE Policy 455.1

## 6. Organize and take action to ensure post-cleanup protectiveness

DOE is currently conducting long-term surveillance and maintenance activities at more than 30 sites around the country, including uranium mill tailing sites, former research reactors, and small sites where nuclear weapons components were once manufactured. Over the next six years, DOE, the U.S. Army Corps of Engineers, and private licensees are expected to complete cleanup at an additional 70 sites. The vast majority of these sites have no ongoing mission for the Department. Most will be transitioned to the Office of Legacy Management for long-term management.

Long-term management will be needed at these sites because there are limitations or challenges such as the following that preclude cleanup to unrestricted use:

- Technical limitations—No complete remediation strategy exists because of technological limitations to effectively destroy and/or reduce the volume of contaminants.
- Economic limitations—The costs to employ existing remediation technologies are prohibitive.
- Worker health and safety challenges—The use of existing remediation technologies for waste handling and removal poses high risks to remediation workers.
- Collateral ecological damage caused by remediation—The use of existing remediation technologies would result in greater ecological damage than would occur by leaving the contamination undisturbed.

This section discusses action in three areas that affect the long-term management of sites where cleanup to unrestricted use was not feasible:

- Establish the Office of Legacy Management.
- Formalize the site transition approach in accordance with DOE orders.
- Sustain appropriate regulatory oversight post-closure.

*Because many remedies today utilize containment and institutional controls rather than treatment of the contaminant source, residual contamination is expected to remain at these sites such that unrestricted use of soil, groundwater, and surface water will not be permitted.*

National Research Council

*Long-term surveillance and maintenance methods shall be designed to assure that the contaminants remain isolated to the extent practicable, and that human health and the environment is protected.*

DOE Policy 455.1



## 6.1 Establish the Office of Legacy Management

The Department's accelerated cleanup effort has heightened the need for a comprehensive approach to ensuring that the taxpayers' investment in cleanup at over a hundred sites across the country remains protective of current and future generations. Thus, the Department is proactively realigning its resources and creating a sustainable, stand-alone Office of Legacy Management. The new organization will allow for optimum management of legacy responsibilities, as its mission is to manage the effects of changes in the Department's mission requirements and ensure the future protection of human health and the environment. LM's primary goals are to

- protect human health and the environment through effective and efficient long-term surveillance and maintenance;
- preserve and protect legacy records and information;
- support an effective and efficient work force structured to accomplish departmental missions and assure worker pension and medical benefits;
- manage legacy land and assets, emphasizing safety, reuse, and disposition; and
- mitigate community impacts resulting from the cleanup of legacy waste and changing departmental missions.

LM will enable the Department to consolidate and focus programs of a similar nature. This move will provide the affected communities a single focal point of legacy management expertise and facilitate communication among the elements of legacy management. Most importantly, concentrating the functions in an office dedicated to legacy management will heighten the visibility and, consequently, the accountability to the affected communities for successful performance of these important departmental functions.

### **ACTIONS**

6.1.1 Establish LM by October 1, 2003.

6.1.2 LM and EM will work as a team to ensure the efficient and effective transition of closure sites.

*The establishment of the Office of Legacy Management demonstrates DOE's continued commitment to manage sites where active remediation has been completed. The establishment of this new office is a significant step to ensuring the long-term protection of human health and the environment.*

Secretary of Energy  
Spencer Abraham

## 6.2 Formalize the site transition approach in accordance with DOE orders

As EM accelerates its cleanup and closure mission, external parties (Congress, local governments, state regulators, and members of the public) have expressed concern regarding the transition of responsibility for sites following EM mission completion. This concern has focused primarily on sites where a different DOE organization will be responsible but also includes the transfer of responsibility to and from external parties.

To ensure the orderly transition of activities and/or sites, the Deputy Secretary has recently signed guidance to ensure clarity of both the procedural approach and the associated responsibilities. This guidance is consistent with, but establishes a more formal procedure than, that signed out by the Deputy Secretary in December 2000. In short, the Deputy Secretary directs the use of the Critical Decision Procedures as delineated in DOE Order 413.3 on project management. Specifically, the guidance directs the use of the project close-out procedure (Critical Decision 4) to ensure that the transfer is conducted in a comprehensive and orderly manner. It is worth noting that this guidance is consistent with the Department's current procedures for accepting sites from the U.S. Army Corps of Engineers (Formerly Used Sites Remedial Action Program sites) and the private licensees (Uranium Mill Tailings Radiation Control Act, Title II sites).

Consistent with the Deputy Secretary's direction, draft DOE Order 430.1B provides a disciplined process for reaching agreement on real property transition/disposition that includes

- planning for disposition once assets are identified as no longer required for current or future mission,
- preparing disposition baseline documentation that includes required information, and
- following a specific transfer protocol unless both transferring and accepting parties agree to an alternative process.

### **ACTIONS**

- 6.2.1 (D) The Office of Engineering and Construction Management (ME-90) will implement the Deputy Secretary's guidance and incorporate the actions into the next change to DOE Order 413.3-1.
- 6.2.2 EM and the affected Landlord Program Secretarial Officers will use the CD-4 documentation to ensure the smooth transition of sites following completion of the EM cleanup mission at a site.

*To ensure protection of human health and the environment once the end state is achieved, the Department shall address how it manages the impacts of future risks, uncertainties, and vulnerabilities, including the creation of contingency plans and the identification of responsible parties in the event that site conditions change after cleanup is completed. In the case of CERCLA sites, such plans should be integrated with the five-year reviews.*

DOE Policy 455.1

*Accordingly, I am hereby directing that you apply the requirements of the Critical Decision process, which are applicable to capital projects, when transferring facilities and/or sites.*

S-2 Memorandum, July 10, 2003

- 6.2.3 The Office of Legacy Management will prepare a lessons learned report regarding the closure and transition of the Weldon Spring Site Remedial Action Project to support the smooth transition of EM closure projects (e.g., Rocky Flats, Fernald, and Mound).

### 6.3 Sustain appropriate regulatory oversight post-closure

During site remediation, and as outlined in the Atomic Energy Act, CERCLA, and RCRA, DOE is regulated by NRC, EPA, and various state agencies. After sites have completed active remediation but an environmental hazard remains, regulators will have a continuing role at DOE sites.

DOE plans to enter into post-closure interagency agreements with EPA and the states which will clearly describe the roles and responsibilities of all parties post-closure, including the regulatory review and approval of post-closure documents.

Pursuant to CERCLA, DOE will produce and update an operation and maintenance (i.e., long-term surveillance and maintenance) plan that describes the actions needed to protect human health and the environment post-closure. EPA will approve this plan under the original FFA, and EPA will approve any subsequent revisions under the post-closure interagency agreement. DOE is also required under CERCLA to complete five-year reviews of sites to demonstrate ongoing protectiveness. DOE conducts annual inspections at the majority of closed sites (particularly those regulated by the Nuclear Regulatory Commission) to further ensure and demonstrate continued protection.

DOE recognizes regulatory oversight will occur at its sites post-closure and is seeking to clearly define roles and responsibilities pursuant to applicable statutes. Post-closure agreements will enable all parties involved to realize their roles and responsibilities and agree on a path forward to ensure continued protectiveness at the site.

#### **ACTIONS**

- 6.3.1 DOE will seek to clearly define regulatory roles post-closure to be consistent with but not exceed statutory requirements.
- 6.3.2 DOE will ensure that post-closure agreements have uniform language and deliverables across the sites to maintain consistency and effectiveness.
- 6.3.3 Negotiations between DOE and regulators should begin early regarding the structure of post-closure agreements and roles and responsibilities to ensure all parties are in agreement upon site closure.

*[DOE] shall enter into an interagency agreement with [EPA] for the expeditious completion by [DOE] of all necessary remedial action at such facility.” Remedial action is defined by §101(24) to include, among other things, “any monitoring reasonably required to assure that such actions protect the public health and welfare and the environment.”*

42 U.S.C. §9620 or §120(e)(2)